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REMARKS

Claims 1 - 3, 11 - 14, 33 - 35 and 38 have been canceled. Claims 4 - 10, 15, 17, 19, 24, 26, 36 and 37 have been amended. Claims 39-41 have been added. No new matter has been added. Thus, claims 4 - 10, 15 - 32, 36, 37 and 39 - 41 are now pending in the present application. In view of the above amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable.

Claims 3 - 10, 14 - 32 and 34 - 38 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 5,630,796 to Bellhouse et al. ("Bellhouse") in view of U.S. Patent Application Publication No. 2002/0055712 to Neracher ("Neracher"). *12/26/07 Office Action*, p. 2.

Belhouse describes a capsule comprising a pair of rupturable membranes (or diaphragms) enclosing already formed particles to be injected into a subject's skin. The capsule is adjacent to a chamber in which a gas is released from a reservoir, via a piston mechanism. The released gas can reach a pressure sufficient to burst the pair of rupturable membranes so as to free the particles which are then carried away by the gas through a nozzle. Obviously, the rupturable membranes as disclosed by Belhouse are not perforated membranes comprising at least one micro-orifice through which droplets can be generated. In fact, the rupturable membranes of Belhouse are burst under the pressure of the gas from the adjacent chamber so as to release the already formed particles into the nozzle.

Neracher discloses a needleless injection device. The liquid to be injected into a subject's skin is propelled from its container through a nozzle, not a perforated membrane, defining an orifice. The propulsion of the liquid is performed through a piston which is in turn propelled by a compressible substance, as can be seen in Figures 1 and 2 of Neracher. The nozzle diameter and length can be adjusted to produce droplets (see paragraph [0039]).

Amended claim 36 recites a method for needleless injection of a liquid substance into a target biological tissue. The method comprises “generating droplets of the liquid substance” in combination with “accelerating the droplets of the liquid substance at a velocity sufficiently high to inject the droplets of the liquid substance into the target biological tissue” and “directing the droplets of the liquid substance toward a surface of the target biological tissue at the sufficiently high velocity to inject the droplets of the liquid substance into the target biological tissue; *wherein generating the droplets of the liquid substance comprises pressurizing a reservoir containing the liquid substance to force the liquid substance from the liquid reservoir through at least one micro-orifice of a perforated membrane to thereby produce a jet of the liquid substance, wherein the jet of the liquid substance transforms into a stream of the droplets.*”

It is respectfully submitted that neither Bellhouse nor Neracher, taken separately or in combination, describe or suggest forcing the liquid substance from the liquid reservoir through at least one micro-orifice of a perforated membrane. Bellhouse describes non-perforated rupturable membranes and Neracher describes an elongated nozzle portion 11 with an orifice 16.

In the Office Action of December 26, 2007, the Examiner indicates that Bellhouse discloses an intermediate chamber 25 that can be considered to be interposed between the pressurized gas supply and the liquid reservoir 28 (page 3, lines 4-6 of the Office Action). The Examiner also indicates that Bellhouse provides the encapsulated liquid drug in a capsule (page 3, line 12 of the Office Action). Applicants respectfully disagree with these statements. In fact, Bellhouse describes in column 4, lines 14-15 that the particles in the capsule 28 could be tiny spherical shells of for example, up to 100 um diameter, in which solid or liquid drugs are encapsulated; the capsule 28 is not a liquid reservoir but a capsule that may contain already formed shells (particles) eventually encapsulating liquid drug.

If, as suggested by the Examiner in page 4, lines 3-6 of the Office Action, the device of Bellhouse is modified with the droplet generator components as taught by Neracher, the liquid

drug encapsulating shells of Belhouse would be forced through a nozzle portion for being directed toward the patients biological tissue. This combination would not produce droplets of liquid using the mechanism as described in amended claim 36.

It should also be mentioned that paragraph [0039] of Neracher describe the liquid droplet producing mechanism as a supersonic shock wave causing degradation of the jet of liquid in droplets a few millimeters from the nozzle. Those of ordinary skill in the art will know that the supersonic shock wave will produce a brutal deceleration of the droplets instead of an acceleration of the droplets as recited in amended claim 36. Again, if, as suggested by the Examiner in page 4, lines 3-6 of the Office Action, the device of Belhouse is modified with the droplet generator components as taught by Neracher, the generated liquid droplets (if such droplets are generated) would be brutally decelerated instead of being accelerated.

Moreover, Neracher discloses a stand-alone device comprising a nozzle for injecting liquid into a subjects skin. Accordingly, there is no incentive to combine the subject matter of Neracher to that of Belhouseto produce and inject droplets of liquid since Neracher already pretends to reach that result.

Therefore, it is respectfully submitted that neither Belhouse nor Neracher, taken separately or in combination, teach generating droplets of the liquid substance "*wherein generating the droplets of the liquid substance comprises pressurizing a reservoir containing the liquid substance to force the liquid substance from the liquid reservoir through at least one micro-orifice of a perforated membrane to thereby produce a jet of the liquid substance, wherein the jet of the liquid substance transforms into a stream of the droplets,*" as recited in claim 36. Accordingly, it is respectfully submitted that claim 36 is not rendered obvious by Bellhouse in view of Neracher and that the rejection of this claim should be withdrawn.

Similarly, amended claim 37 recites a needleless syringe for injecting a liquid substance into a target biological tissue, comprising "a generator of droplets of the liquid substance" and "a

droplet accelerator for accelerating the droplets of the liquid substance toward a surface of the target biological tissue in order to inject the accelerated droplets into the target biological tissue” wherein “the generator of droplets comprises: *a reservoir of the liquid substance to be injected; a perforated membrane comprising at least one micro-orifice through which the liquid substance from the reservoir is supplied; and a source of pressure for pressurizing the reservoir of the liquid substance and forcing the liquid substance through the at least one micro-orifice of the perforated membrane to thereby produce a jet of the liquid substance, wherein the jet of the liquid substance transforms into a stream of the droplets.*”

For at least the same reasons as described above in regard to claim 36, it is respectfully submitted that claim 37 is also allowable and that the rejection of this claim should be withdrawn.

Newly submitted claim 39 describes “*generating a high velocity jet of gas; generating droplets of the liquid substance; supplying and conveying the droplets of the liquid substance into the high velocity jet of gas; and guiding the high velocity jet of gas through a channel.*” Newly submitted claim 39 further describes that “*generating the droplets of the liquid substance comprises: containing the liquid substance into a reservoir; interposing a perforated membrane between the reservoir and the channel; and pressurizing the reservoir containing the liquid substance to force the liquid substance from the liquid reservoir through the perforated membrane to thereby produce a jet of the liquid substance that transforms into a stream of the droplets.*”

It is respectfully submitted that Belhouse and Neracher, taken separately or in combination, fail to describe the combination of features including (a) generating a high velocity jet of gas guided through a channel, (b) generating the droplets of the liquid substance by (i) interposing a perforated membrane between the reservoir and the channel and (ii) pressurizing the reservoir containing the liquid substance to force the liquid substance from the liquid reservoir through the perforated membrane to produce droplets supplied in the jet of gas flowing

through the channel.

Again, Neracher discloses a stand-alone device comprising a nozzle for injecting liquid into a subject's skin. Accordingly, there is no incentive to combine the subject matter of Neracher to that of Belhouse to produce and inject droplets of liquid since Neracher already pretends to reach that result. Moreover, Neracher does not describe the use of a perforated membrane to form a droplet generator that can be adapted to the device of Belhouse for generating, supplying and accelerating droplets of liquid in the high velocity jet of gas in view of injecting the liquid substance into a patient's skin.

Accordingly, it is respectfully submitted that claim 39 is not rendered obvious by Bellhouse in view of Neracher and that this claim is allowable.

Similarly, newly submitted claim 40, recites a needleless syringe for injecting a liquid substance into a target biological tissue, the syringe comprising "a generator of high velocity jet of gas; a generator of droplets of the liquid substance having an outlet for supplying the droplets of the liquid substance into the high velocity jet of gas whereby the droplets of the liquid substance are conveyed within the high velocity jet of gas" and "a channel for guiding the high velocity jet of gas toward a surface of the target biological tissue to thereby inject the conveyed droplets of the liquid substance into the target biological tissue" wherein *"the generator of the droplets of the liquid substance comprises: a reservoir containing the liquid substance; a perforated membrane interposed between the reservoir of the liquid substance and the channel for guiding the high velocity jet of gas; and a source of pressurization of the reservoir containing the liquid substance to force the liquid substance from the liquid reservoir through the perforated membrane to thereby produce a jet of the liquid substance that transforms into a stream of the droplets."*

For at least the same reasons as described above in regard to claim 39, it is respectfully submitted that newly submitted claim 40 is also allowable.

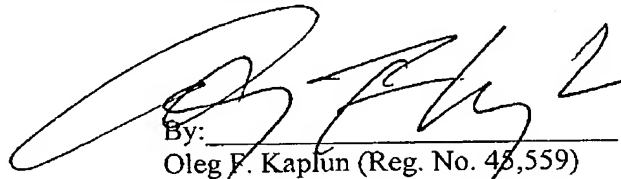
The Examiner's attention is also drawn to the subject matter of claims 9 and 41 describing that by, interposing the perforated membrane between the liquid reservoir and the channel, the flow of the high velocity jet of gas can be guided along a face of the perforated membrane on a side of the perforated membrane opposite to the liquid reservoir. In this manner, the jet of the liquid substance and the generated droplets of the liquid substance are supplied within the high velocity jet of gas. Again, this feature is not described nor suggested by Belhouse and Neracher, taken separately or in combination.

Because claims 4-8 and 10 depend from and include all of the limitations of claim 39 and claims 15-32 depend from and include all of the limitations of claim 40, it is respectfully submitted that these claims are also allowable and that the rejection of these claims should also be withdrawn.

In light of the foregoing, Applicants respectfully submit that all of the presently pending claims are in condition for allowance. All issues raised by the Examiner having been addressed, an early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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